

centre. It includes exposures of all the Palæozoic formations from the base of the Potsdam Sandstone up to the Medina Shales. Many of the strata are highly fossiliferous.

*Report I.*—On the Iron-Ore Deposits along the Kingstown and Pembroke Railway in Eastern Ontario, by E. B. Ingall, 1901. Numerous borings, mines, and mineral products in the Counties of Frontenac, Lanark, Renfrew, and Leeds are described, and illustrated by plans and a general geological map of the district. An Appendix, very useful to petrologists, by A. E. Barlow, on the microscopic examination of twenty-five rocks associated with the ores is added. And there is a large table of localities and analyses of the magnetites and the hæmatites.

*Report J.*—The Geology of Parts of the Provinces of Quebec and Ontario, by R. W. Ells, 1901. After careful consideration of the earlier opinions on the rocks of this great area of nearly 4000 sq. miles in extent, it is concluded that there is evidence to show that much of what was described in earlier Reports as altered sedimentary rocks must now be accepted as altered igneous rock. This includes the greater bulk of the gneissic Laurentian Rock, also much of the pyroxenic and felspathic rocks, and of the white binary granites or pegmatites often associated with the crystalline limestones. The latter, however, and their associated whitish quartzites, as also certain reddish-grey and black gneisses, may be safely taken as representing true sediments, but highly metamorphosed.—The geological structure is described in detail throughout the district topographically; and good photographs of contorted limestone and gneiss are given in plates iii. and iv. Then the several geological formations (as Utica, Trenton, Black-River, Chazy, Calciferous, and Potsdam) are successively treated as exposed in the district under notice. The apatite, asbestos, graphite, iron-ores, mica, barite, felspar, building-stone, &c. are described as to their occurrence and associated rocks, and orderly lists of the Fossils from the local exposures are added by H. M. Ami.

*Report M.*—On the Surface Geology shown on the Federicton and Andover Quarter-sheet Maps, New Brunswick, by R. Chalmers, 1902. This Report carefully describes the physiographic features, changes of level, denudation, glaciation and its results, the inland and the marine and freshwater deposits (recent), the soils, and forests. The useful minerals found in the district are also noticed.

*Report O.*—Notes on certain Archæan Rocks of the Ottawa Valley, by A. Osann. Translated from the German by N. N. Evans, 1902. Certain gneisses in the neighbourhood of Ottawa are described in detail, and compared with other rocks of the same kind. The occurrence of Apatite and Mica north of Ottawa is fully treated. The bibliography of the former, its discovery, nature, and origin, is given. It occurs as veins in the gneiss, and is always accompanied

by pyroxenite. Sometimes granite and gabbro are traversed by pegmatite veins, and these in turn by veins of graphite. The vein-minerals with apatite are pyroxene, mica, calcite, and felspar, also actinolite, tourmaline, scapolite, titanite, pyrite, fluorspar, quartz, garnet, epidote, idocrase, zircon, prehnite, cabazite, molybdenite, graphite, &c. A careful exposition is given of the vein-materials, various rocks more or less associated with the apatite-veins, especially certain crystalline schists, and some of the eruptive rocks.

The gneisses, quartzites, vein-granites, and other associated rocks have been impregnated from the veins, hence secondary developments of some minerals, as augite &c.

The Eozoon Limestone of Côte St. Pierre is described in full detail, as occurring just above the contact of the limestone with the mica-hypersthene gabbro, forming the mass of the hill below, and is regarded as having resulted from contact-metamorphism. It is compared with a rock having a similar structure ejected from Vesuvius, and described by Johnston-Lavis and Gregory. The presence of apatite in the "Leopard-rock" of Ottawa is referred to, and the mode of formation of that peculiar augite-gneiss is explained.

Graphite is referred to as being widespread, and is described from two localities—Graphite City in Buckingham Township and in Grenville Township. It occurs mostly in veins, but sometimes diffused from them into the neighbouring rocks of gneiss &c. Like apatite it occurs with hypersthene-biotite gabbro together with scapolite, oxide of tin, hornblende, titanite, and zircon. The graphite distributed in the granular limestone of Canada may well have been derived from the carbon originally in the limestone, and possibly of organic origin, but subsequently modified by the metamorphism which changed the limestone into marble.

It is highly probable, however, that fumarole-action had to do with the formation of both the apatite and graphite veins, filling up cracks and fissures, in the old cooling rock-masses, during their solidification.

*Report R.*—On the Section of Chemistry and Mineralogy, by G. C. Hoffmann, T. G. West, and R. A. A. Johnstone, 1901. This consists of the (1) Results of Miscellaneous Examinations, pp. 1-17; (2) Mineralogical Notes, pp. 18-25; (3) Coals and Lignites, pp. 25-31; (4) Limestones and Dolomites, pp. 31-35; (5) Iron Ores, pp. 35-36; (6) Nickel and Cobalt, pp. 37-38; (7) Gold and Silver, pp. 38-47; (8) Natural Waters, pp. 48-60; (9) Miscellaneous Materials, pp. 60-64. Although made on account of local requirements, these researches are mostly of wide application and general value.

*Report S.*—Mineral Statistics and Mines, by E. O. Ingall, Th. C. Dennis, and T. McLeish: 144 pages.

A good Index completes the Volume.

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